

REMARKS

I. Introduction

Claims 11 to 20 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable. Reconsideration is respectfully requested.

Applicants note with appreciation the acknowledgement of the claim for foreign priority and the indication that all certified copies of the priority documents have been received.

II. Objections to the Drawings

Regarding the objection to the drawings under 37 C.F.R. § 184(p)(4) with respect to reference character 17, the specification has been amended herein, without prejudice, to assign the reference numeral 17 to the auxiliary circle and the reference numeral 24 to the flow tube.

Regarding the objection to Figure 2, the specification has been amended herein without prejudice to designate the reference numeral 20 to the diameter of the auxiliary circle 17.

Regarding reference numerals 26 and 29, the specification has been amended herein, without prejudice, to remove these reference numerals.

Withdrawal of the present objections is respectfully requested.

III. Objections to the Specification

The specification is objected to because of informalities associated with the descriptions of the reference numerals associated with the figures. While Applicants do not necessarily agree with the objections, to facilitate matters the specification has been amended herein, without prejudice in self-explanatory manner. No new matter has been added.

Withdrawal of the present objections is respectfully requested.

IV. Rejection of Claims 11 and 17 to 20 Under 35 U.S.C. § 102(b)

Claims 11 and 17 to 20 are rejected under 35 U.S.C. § 102(a) as anticipated by U.S. Patent No. 5,967,989 ("Cimochowski"). For at least the following reasons, Applicants respectfully submit that Cimochowski does not anticipate the presently pending claims.

Claim 11, as presented, relates to an ultrasonic flow sensor for measuring a volumetric flow rate of a flowing medium through a flow channel, comprising, in relevant part, an interlaid ultrasonic transducer array that generates ultrasonic waves and a linear focus of the ultrasonic waves having at least a first position and a second position, the difference in position being indicative of the volumetric flow rate of the flowing medium. The Office Action refers to Figure 20 of Cimochowski as disclosing all of the features of claim 11. Cimochowski, however,

does not disclose or suggest either the interlaid ultrasonic transducer or the linear focuses of the ultrasonic waves of claim 11.

To anticipate a claim, each and every element as set forth in the claim must be found in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of Calif.*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore, “[t]he identical invention must be shown in as complete detail as is contained in the . . . claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). That is, the prior art must describe the elements arranged as required by the claims. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990).

Though Cimochoowski does include ultrasonic transducers in the structure of Figures 20A and 20B, Cimochoowski does not disclose, or even suggest, that the ultrasonic transducers are interlaid. In fact, none of the transducers described in Cimochoowski carry the feature of the interlaid ultrasonic transducer of claim 11. The ultrasonic transducers of Cimochoowski merely disclose structure that will produce ultrasonic waves out of phase by 90 degrees. *See, e.g.*, column 19, lines 54 to 56. The transducers of Cimochoowski do not achieve the uniform coverage and symmetrical transmission and reception characteristics of the present invention, as described on page 2, lines 4 to 8 of the specification of the present application.

Further, claim 11 has been amended herein, without prejudice, to include a linear focus of the ultrasonic waves having multiple positions, the difference in position being indicative of the volumetric flow rate of the flowing medium. Cimochoowski does not disclose, or even suggest, the feature of claim 11. Instead, Cimochoowski describes a system of two different transducers, the second transducer receiving the echo of the signal from the first transducer. No linear focus of any ultrasonic waves are described.

As such, Cimochoowski does not disclose, or even suggest, each and every element as set forth in claim 11. Therefore, Cimochoowski does not anticipate independent claim 11, or dependent claims 17 to 20.

Further, the Office Action does not address the subject matter of claim 20. Claim 20 has been amended herein, without prejudice, in accordance with the amendment to claim 11, from which claim 20 depends. Applicants respectfully submit that Cimochoowski does not disclose, or even suggest, a shift in the linear focus of the ultrasonic waves, nor does Cimochoowski disclose, or even suggest, detection of such a shift. Therefore, Cimochoowski does not anticipate claim 20, as presented.

Withdrawal of the present rejection is respectfully requested.

V. Rejection of Claim 12 Under 35 U.S.C. § 103(a)

Claim 12 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Cimochoowski in view of German Patent No. DE 4416826 (“Schulze”). For at least the following reasons, Applicants respectfully submit that the combination of Cimochoowski and Schultze does not render unpatentable the presently pending claim.

Claim 12 depends from claim 11 and therefore incorporates all of the features of claim 11. For at least the reasons more fully set forth above with respect to claim 11, Cimochoowski does not disclose or suggest all of the features of claim 11. Schulze does not cure the critical deficiencies of the primary reference. As such, the combination of Cimochoowski and Schulze does not disclose or suggest all of the features of claim 12, and therefore does not render unpatentable the presently pending claim.

Withdrawal of the present rejection is respectfully requested.

VI. Rejection of Claims 13 to 16 Under 35 U.S.C. § 103(a)

Claims 13 to 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cimochoowski. For at least the following reasons, Applicants respectfully submit that Cimochoowski does not render unpatentable the presently pending claims.

Claims 13 to 16 depend from claim 11 and therefore incorporate all of the features of claim 11. For at least the reasons more fully set forth above with respect to claim 11, Cimochoowski does not disclose or suggest all of the features of claim 11. As such, Cimochoowski does not disclose or suggest all of the features of claims 13 to 16, and therefore does not render unpatentable the presently pending claims.

Further to claims 13 and 14, the Office Action asserts, in paragraph nine (9), that it would have been obvious “to provide a curved reflecting surface having a specific radius of curvature since it would be necessary to form a shape of the plate to confirm the contour of the flow tube in order to properly fit in the tube and thus achieve a proper reflection of the acoustic waves.” The Examiner asserts that the radius of curvature of the curved reflecting surface is intended to follow the form of the flow tube. As shown in Figures 1 and 2, flow direction 14 indicates that any radius of curvature of the flow tube 24 is perpendicular to the radius of curvature 19 of the curved reflection surface 13. The curvature 23 of the reflection surface 13 is not in conformity with the flow tube 24, and must be created in order to achieve the object of the present application. In addition, the radius of curvature is not “necessary,” as the Office Action asserts. As describe on page 6, lines 9 to 15, it is possible to achieve the object of the present

invention without a curved reflection surface. As such, the features of claims 13 and 14 are not rendered obvious over Cimochoowski.

Further to claims 15 and 16, the Office Action asserts that the arrangement of claims 15 and 16 would generate a pressure variation that would provide a reliable measurement. There must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR International Co. v. Teleflex Inc.*, 82 U.S.P.Q.2d 1385, 1386 (2007). The Office Action gives no indication as to why a pressure variation would provide a reliable measurement. Applicants respectfully submit that the Office Action has not sufficiently articulated a reasoning with some rational underpinning to support the legal conclusion of obviousness.

Withdrawal of the present rejection is respectfully requested.

VII. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,
KENYON & KENYON LLP

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/Clifford A. Ulrich/
By: Clifford A. Ulrich (Reg. No. 42,194) for:
Gerard A. Messina
(Reg. No. 35,952)

One Broadway
New York, NY 10004
(212) 425-7200

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